**Experiment on powder X-ray diffraction as a tool to characterize materials**

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| **Aim/Objectives** | To investigate the principles of X-ray Diffraction (XRD) and utilize its techniques to analyze and determine the structural properties of crystalline materials, such as lattice parameters, crystallite size and density. |
| **Theory/Principle**  **(Use suitable equations, figures etc.)** |  |
| **Methods and Materials Used** |  |

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| **Results & Discussions** | |
| **Graph -1 (XRD pattern of given sample(s) with proper indexing of the planes)** |  |
| **Graph -2 (XRD pattern showing B1/2)** |  |

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| **Data Analysis *(Detailed calculations must be given)*** | |
| (i) Lattice Parameters (a, b, c) in units of Å |  |
| (ii) Crystallite Size (in units of nm) |  |

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| **Conclusions** |
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| **Precautions** |
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| **References** |
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